

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

United States Department of Agriculture
Bureau of Biological SurveyWildlife Research and Management Leaflet BS-65

Washington, D. C.

*

October 1936

RELATIVE WEIGHTS OF YOUNG RABBITS AND DOES DURING THE SUCKLING PERIODBy Chas. E. Kellogg, Biologist, Section of Fur Resources
Division of Wildlife Research

How much heavier both at birth and at weaning time are rabbits from smaller litters than those from larger litters? How many young can a doe raise most profitably to weaning age? When during the suckling period are the most rapid gains made? And when will the doe lose weight, and how much? A progressive rabbit breeder is naturally interested in such questions and in obtaining related information that will assist him in developing his business. To supply such data is a function of the United States Rabbit Experiment Station, at Fontana, Calif.

In order that there may be no misunderstanding about the conditions at the station under which the rabbits herein considered were raised, the following should be carefully noted: (1) The rabbits were fed on 13 different experimental rations, 60 percent of each being good quality alfalfa hay, the rations in most cases having a nutritive ratio of 1:3.7--that is, 1 part of digestible protein to 3.7 parts of carbohydrates and fats; (2) equal numbers of the does were scheduled to be bred at 28, 42, and 56 days after kindling; (3) all the rabbits were weighed weekly; (4) larger litters were reduced to 7 within 1 day after kindling; and (5) the animals were New Zealands, the foundation stock of which was donated to the station in 1927 at the time of its establishment. It should also be remembered that rabbits on feeding experiments are unduly disturbed by handling and weighing and therefore the gains made at an experiment station are not likely to be quite so rapid as those obtained in a well-managed commercial rabbitry.

The 410 litters produced during 1933-34, which supplied the data for a preceding leaflet, BS-31, "Average Weight of Rabbits at Weaning Time", are also the basis of this leaflet. As it was desired in this instance to obtain the average weight of all individuals from 1 to 8 weeks of age in each litter studied, only 113 of the 410 litters could qualify, because only in these particular litters were no young "lost or unaccounted for" during the entire seven weeks of weighing and recording data. There were 676 rabbits in the 113 litters. Even though a selection of litters was made, the results obtained are not an absolutely accurate indication of the effect the size of litter has on rapidity of growth. It might be inferred, and rightly so, that some of the litters had fewer young than others because some does may have been inferior breeders, and that these young therefore would not make as rapid growth as the young of better stock.

The heavy line starting at the lower left-hand corner in the accompanying graph (fig. 1) shows the average weekly weight of the entire 676 young. The lighter lines indicate the average weekly weight of rabbits in litters of various sizes. The first number on each line represents the size of litter, the second the number of litters, and the last the number of individuals on which the average is based. For illustration: Litters composed of 3 young each totaled 8 litters and 24 individuals, and those of 7 each totaled 59 litters and 413 individuals. The data on the litters with 7 young are particularly significant because of the large number of individuals. The graph for litters of 5 young each coincides with the heavy line, the average of the 676 rabbits. These graph lines also show what weight, on an average, may be expected at different weeks of age; for example, the average of 676 individuals indicates that 6-weeks-old New Zealands will weigh approximately 2.3 pounds.

How much heavier at birth and at weaning are individuals from the smaller litters compared with those from the larger litters? Which make the most rapid gain? From the graph it will be noted that the rabbits in the smaller litters averaged heavier at one week of age. (The young were not weighed at time of kindling.) Though this extra initial weight has but little influence on the weight of the rabbit at maturity, it is a contributing factor toward the rapid early gains in which the commercial breeder is intensely interested. It will also be seen by the steepness of the slant and the increasing divergence of the lines that the individuals from the smaller litters also made the most rapid gain continuously throughout the 8 weeks suckling period.

The figures at the upper right-hand corner show how much heavier at 8 weeks of age the rabbits in the smaller litters averaged than those in litters of 7. The young in litters of 5 and 6 averaged 0.10 pound greater weight than those in litters of 7. Those in litters of 4 averaged 0.46 pound greater, and those in litters of 3 averaged 0.86 pound greater. The smaller the litter the greater the individual weight at any age previous to weaning, but as mentioned earlier, the difference might be considerably greater if does equally as good as those rearing 7 to the litter had been required to rear a smaller number. Exact information on this subject can be obtained only from a carefully controlled experiment to study this problem alone.

There is an optimum size of litter that will give the greatest net return in money to the rabbit breeder, but this will depend largely on how good the doe is and on how good a feeder and caretaker the man himself is. The better rabbit raiser can bring the larger litters to a more satisfactory weaned weight than the indifferent rabbit breeder can the smaller litters from equally as good does. The greater the productivity of the does the better must be the husbandry practices to get the most efficient results. Some breeders believe that 5 young to the litter give most satisfactory results, whereas others hold that 6 or 7 young per litter are better. In general, it might be said, though without definite experimental evidence to back it up, that the larger litters, up to 7 or 8, depending on the ability of the doe, will be the most profitable to the good rabbit raiser. The does with less ability should gradually be eliminated from the rabbitry.

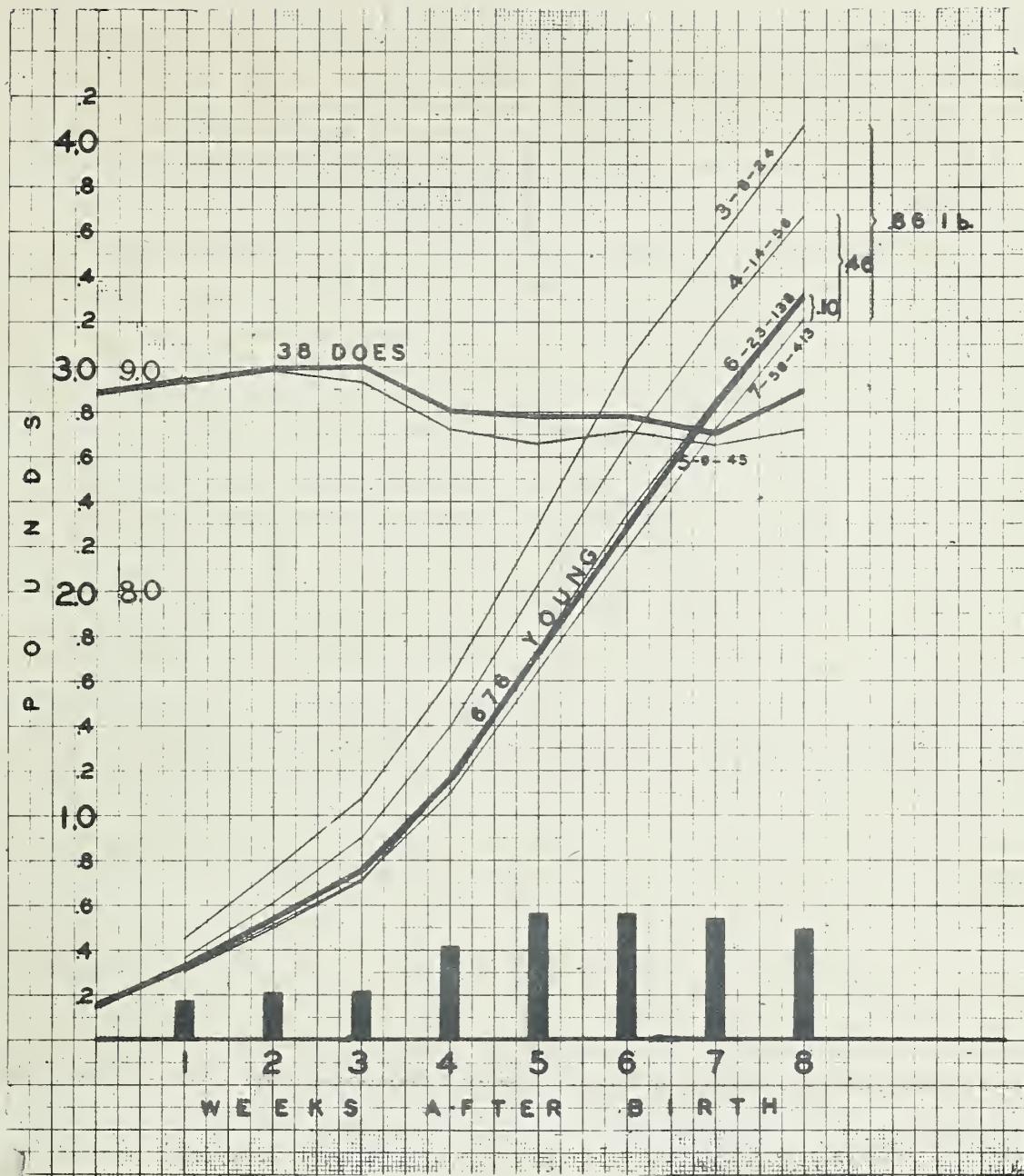


Figure 1.--Average weekly weights of young rabbits up to weaning time (8 weeks) and of some does during this suckling period. See text for detailed explanation.

It was not possible from the present data to determine feed cost per pound of gain according to the size of litter produced, but the director of the Rabbit Experiment Station has so organized the new experimental work that individual feed records are being kept for each doe and litter, and this will make it possible to determine relative feed costs.

During what period of its early life does the rabbit make its most rapid gain? The height of the columns at the bottom of the graph represents the average weekly gain of the 676 rabbits. These show that during the first 3 weeks the rabbits made a slightly increased gain each succeeding week. There was a decidedly greater gain during the 4th week, when the young rabbits began to eat grain and hay. The greatest gains were during the 5th and 6th weeks, in each of which a maximum of 0.56 pound per week was attained. There was a slight decline in the weekly gain in both the 7th and 8th weeks. A plausible explanation for this slowing up in growth is that the does are not furnishing the young with as much milk as during the 5th and 6th weeks. The question arises then whether it would not be a good rabbit husbandry practice to wean the young rabbits at 7 weeks of age or maybe younger and to feed them concentrates and hay until the desired weight is attained. An experiment to obtain definite facts along these lines is in progress at the station.

From the data here presented, a factor has been determined by which the weaned weight at 8 weeks can be adjusted for comparison with the weight at any desired age in days beyond the 56 days if the same rate of gain continues in the 9th week as in the 8th. This factor (obtained by dividing the average daily gain during the last week by the average final weight) is 2.11 percent of the weaned 8 weeks' weight for each day over 56 days, this total to be added to the 56-day weight.

For example: Suppose a breeder wishes to know how his neighbor's rabbits, which weigh 3.5 pounds each at 60 days of age, compare with his own, weighing 3.25 pounds at 56 days. Four times 2.11 equals 8.44; 8.44 percent of 3.25 added to 3.25 gives a comparable weight of 3.52 pounds, or in other words, the 56-day-old rabbits are a little heavier for their age than the 60-day rabbits.

If the adjustment of the weights of the older rabbits is to be made to the 56-day-basis, the following percentages of the weights of the older animals will give comparable figures: 97.9 percent of the weight at 57 days; 95.9 percent at 58 days; 94.0 percent at 59 days; 92.2 percent at 60 days; 90.4 percent at 61 days; and finally 88.8 percent of the weight at 62 days.

The rate of gain in the giant breeds or in the smaller breeds may not be the same as in the New Zealands. It should be kept in mind that all the above is based on the premise that the rate of gain during the 9th week is the same as for the 8th week after kindling. It is not advisable to make adjustments for rabbits older than 62 days.

What happens to the doe during lactation? Among the does included in these experiments were 38 that were not bred until the day they weaned their 8-weeks-old young. The data on these does were tabulated and an average weight was found at the end of each week during lactation. From the figures 8.0 and 9.0 to the left of the chart it can be seen that the does averaged 8.89 pounds just after kindling. They then gained slightly in weight until the end of the 3d week, when an average maximum of 9.0 pounds live weight was attained. There was a loss of 0.2 pound during the 4th week, indicating a heavy lactation period, and then a maintenance weight at about this level for 2 weeks, another slight unexplainable loss during the 7th week of lactation, and a very noticeable increase in weight during the 8th week. This indicates also that this portion of the lactating period is not so severe a drain on the doe and that possibly she could be as satisfactorily bred at 7 weeks after kindling as at 8 weeks. Twenty-six of these 38 does had litters of 7 each, and the lighter graph line shows the weekly weights of this group. The larger litters proved to be a more severe drain on the does, as they began losing weight during the 3d week and were lighter also during the entire lactation period than those suckling smaller litters.

It should be understood that complete answers to the questions asked at the beginning of this leaflet cannot be given until definite experiments are conducted to prove or disprove certain specific points. The information obtained from weighing the large numbers of does and young, however, should be useful to rabbit breeders.

